(54) Title: IMPROVED LOTTERY SYSTEM

(57) Abstract: A computerized lottery or wagering system includes a game generator and a plurality of vendor stations that permit players to select game parameters. The game is graphically portrayed in animation as one or more races (horse race, dog race, car race, motorcycle race, etc.). The game may entail win, place, show, quinella, exacta/perfecta, trifecta, or series bets. At a predetermined time for each game, selection of game parameters for that game is ended and a winning sequence of numbers is randomly generated. The game generator selects and seamlessly composes a plurality of video segments into an animated video sequence of the race(s) corresponding to the winning sequence of numbers, for broadcast via RF transmission, microwave transmission, fibre optic cabling or closed circuit television lines. The video segments are rendered directly to a compressed digital format to maintain the video image in the highest quality possible. The system determines which players are eligible for a grand prize, and, after the game is shown, announces the grand prize winner. The games are generated and broadcasted periodically, e.g., one-per-minute, once-per-day, once-per-week, etc.

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IMPROVED LOTTERY SYSTEM

FIELD OF THE INVENTION

The present invention relates to computerized wagering or
5   lottery systems, and more particularly to a lottery or
wagering system that graphically portrays the game in
animation as a race.

BACKGROUND OF THE INVENTION

10   Many states have used lottery or on-line games, such as
number games and "instant winner" games, as an added source
of revenue.   These games have become quite popular and
successful.

15   One type of numbers game involves the use of numerous
remote computer stations located in stores throughout the
state which communicate with a central computer.   A
customer seeking to play the game marks the numbers he
wishes to enter as his choices on a computer scannable or
20   readable entry form. Alternatively, the customer may elect
a Quick-pick option that is provided by many lottery
systems for random selection of the customer's numbers by
a computer.   The customer pays the entry fee, usually no
more than a few dollars, and the store clerk feeds the
25   entry form into a card reader controlled by the computer,
which registers the numbers selected and an ID number in
the central computer.   After wagering has been closed to
new entries, a carefully monitored selection committee
chooses the winning numbers.   This may involve, for
30   example, operating a machine loaded with balls having
eligible numbers marked thereon to select at random the
appropriate number of balls. This selection process often

1

is broadcast on local television stations so that
contestants can watch to see if their numbers have been
selected. While many varieties of such games exist,
examples of patents relating to this general scheme include
5   U.S. Pat. Nos. 4,689,742 (Troy) and 4,494,197 (Troy).

U.S. Pat. No. 5,035,422 (Berman) appears to discuss an
interactive game show which seeks to allow home viewers to
select an outcome from a number of possible choices and to
10   share in the prizes awarded on the show.

Similarly, U.S. Pat. No. 5,283,734 (Van Kohorn) discusses
an interactive television wagering system whereby audience
members can enter a response to a situation presented on
15   television by entering a response on a keyboard. According
to the patent, lottery games may be played by entering
numbers at remote stations and stored in a central
computer. The winning numbers are selected and presented
at a remote station, following which winners can redeem
20   their tickets.

Another computerized lottery wagering system is apparently
discussed in U.S. Pat. No. 5,415,416 (Scangelli). This
system appears to direct a telephone caller with an
25   automatic call director through a number of selections to
assist the caller in placing a bet; the cost of the bet is
charged to a credit or debit card. The system assigns an
associated ticket number to each customer.

30   Each of the above-identified patents is incorporated by
reference herein in their entirety. While the foregoing

patents attempt to make lotteries more accessible to
bettors, they do not vary much from standard on-line games.
It appears that states and other entities running such
lottery games have experienced some difficulty in
5   increasing the number of interested day-to-day
participants, and in maintaining the day-to-day interest of
those who do participate on a regular basis.

As a result, a need exists for a lottery game which
10   enhances the intrinsic excitement of the game to maintain
and preferably increase the interest of those who do not
play often, as well as the interest of everyday players.

SUMMARY OF THE INVENTION

15   The present invention overcomes these and other
disadvantages of prior games and provides a lottery system
having in one embodiment one or more vendor stations and a
game generator graphically portraying a lottery result in
animation as a race for video display. The vendor stations
20   are configured to provide predetermined game parameters
corresponding to race participants to a player for
selection. The game generator is configured for data
communications with the vendor station or stations, and has
a storage device storing a plurality of video segments of
25   animated races, a lottery result selector randomly
selecting at a predetermined time an order of finish of the
race participants in the race to be graphically portrayed,
a game controller retrieving selected ones of the video
segments stored in the storage device according to the
30   order of finish selected by the lottery result selector and
composing the retrieved segments into a video sequence, and

3

a communication interface communicating the composed video
sequence to the at least one vendor station. The composed
video sequence is preferably contiguous and seamless.

5   The race may comprise a plurality of stages, with each
stage having a corresponding subset of the plurality of
video segments. The game controller selects for each stage
one video segment from the corresponding subset.

10   There may be a plurality of combinations of the video
segments stored in the storage device that are possible for
each order of finish. The game controller selects one of
the plurality of combinations that are possible for the
selected order of finish.

15

The present invention also provides a lottery system which
graphically portrays a lottery result in animation as K
races. The system has at least one vendor station and a
game generator. The vendor station is configured to
20   provide predetermined game parameters corresponding to race
participants of the K races to a player for selection. The
player selecting a sequence of K selected ones of the game
parameters corresponding to the K races. The game
generator is configured for data communications with the
25   vendor station, and has a storage device storing a
plurality of animated races, and a lottery result selector
randomly selecting winners of the K races at a
predetermined time after the selected game parameters have
been communicated by the at least one vendor station to the
30   game generator. The game generator retrieves K selected
ones of the plurality of animated races stored in the

storage device according to the K race winners selected by
the lottery result selector, and composes the retrieved
races into a video sequence. The composed video sequence is
communicated from the game generator to the at least one
5   vendor station. The received video sequence is displayed
by the vendor station at a video display. The K selected
animated races retrieved from the storage device preferably
are distinct.

10   **BRIEF DESCRIPTION OF THE DRAWINGS**
The above and numerous other objectives, features and
advantages that may be achieved by the present invention
would be more readily understood from the following
detailed description of the preferred embodiments by
15   referring to the accompanying drawings wherein:

FIG. 1 is a block diagram of a lottery system according to
one embodiment of the present invention;

20   FIG. 2 is a block diagram of a game generator in an
exemplary embodiment of the present invention;

FIG. 3 is a block diagram of a remote player station in
accordance with an exemplary embodiment of the present
25   invention;

FIG. 4 is a perspective view of an alternative embodiment
for the remote station, illustrating a kiosk for the remote
station;

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FIG. 5 is an exemplary flow diagram showing operation of

the remote station of FIG. 3 or FIG. 4;

FIG. 6 is an exemplary flow diagram showing operation of
the game generator of FIG. 2 receiving player selection
5   data from a remote station;

FIG. 7 is an exemplary flow diagram showing operation of
the game generator of FIG. 2 generating lottery results;
and
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FIG. 8 is a block diagram of a lottery system according to
another embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS
15   In a computerized wagering or lottery game in accordance
with a preferred embodiment of the present invention,
players select a sequence-specific subset of K numbers that
are selected from a predetermined set of integers. K is
predetermined and the number of integers in the set may be
20   larger than or equal to K. The selected numbers may be
either non-repeating (i.e. mutually exclusive) or repeating
(i.e. a number may appear more than once in the selected
sequence). When the selected numbers must be non-repeating
they may define, for example, horses in one horse race for
25   a win, place, show, quinella, exacta/perfecta or trifecta
bet. When the numbers may be repeating they may define,
for example, selected horses in K respective horse races
for a series bet.

30   The players are issued tickets identifying the respective
sequence-specific subsets of K numbers which they selected.

6

Each issued ticket is assigned a unique multidigit
identifier which identifies the ticket with the player
making the selection.   The identifiers of all issued
tickets are stored for selective retrieval. After all the
tickets are issued, one sequence-specific subset of K
numbers is randomly selected, and the identifiers of all
issued tickets bearing the one sequence-specific subset are
selectively retrieved from memory.   One of the retrieved
identifiers and the ticket to which the one identifier is
assigned is randomly selected to determine a grand prize
winner of the lottery.   Alternatively, the grand prize
winner may be selected from the pool of all players of the
game.

The types of lottery games contemplated include games where
the player can select predefined game parameters, such as
characters,   letters   or   numbers.   The   game   may   be
graphically portrayed in animation as a race wherein the
game   parameters   are   numbers   associated   with   the
participants in the race.   Each race has a number of race
participants equal to the number of integers in the set and
respectively designated by corresponding integers of the
set.   Examples of some games contemplated include (without
limitation)   horse   races,   dog   races,   car   races   and
motorcycle races.

Preferably, an animated video sequence representing one
race   in   the   case   of   non-repeating   numbers   in   the
sequence-specific   subset,   or   K   races   in   the   case   of
repeating   numbers   in   the   sequence-specific   subset,   is
generated   and,   after   all   the   tickets   are   issued,

7

broadcasted. The games may take place periodically at
virtually any interval, e.g., one-game-per-minute, one-
game-per-five-minutes, one-game-per-day, one-game-per-week,
etc. If the games are broadcasted on public or cable
5   television, the frequency of the broadcasted games, of
course, would depend in part on program scheduling of the
television station.

For the purposes of explaining the present invention, the
10   game discussed below is a horse racing game wherein players
have three ways in which to win: 1) picking the win, place
or show horse; 2) picking the win and place horses in exact
order of finish (a perfecta or exacta) or in either order
of finish (a quinella); and 3) picking the win, place and
15   show horses (a trifecta). The players eligible for the
grand   prize   may   be   only   the   trifecta   winners.
Alternatively, all winners or all players may be eligible
for the grand prize.

20   In accordance with a preferred embodiment of the present
invention, a computerized lottery or wagering system
includes a game generator connected to a plurality of
remote on-line vendor stations. In one embodiment, a
central station serves as a communication interface for
25   transferring the selected game parameters from the remote
vendor stations to the game generator, and for transferring
data regarding the winning results from the game generator
to the remote vendor stations. In another embodiment,
there is no direct connection between the vendor stations
30   and   the   central   station,   and   the   game   generator
communicates directly with the remote vendor stations.

The plurality of remote vendor stations are configured to
provide predetermined game parameters to a player for
selection using, for example, a keyboard. Typically, the
selected game parameters are entered by an operator of the
remote vendor station. Alternatively, if a kiosk type of
remote station is used, the player can directly select the
game parameters. The remote stations transfer the selected
game parameters to the game generator either directly or
via the central station.

At a predefined time, selection of the game parameters is
ended for a particular game. The game generator or an
operator randomly selects the winning sequence of numbers
associated with a game event, for example, the win, place
and show horses. The game generator includes memory which
stores a plurality of video sequences representing game
events.   Preferably, the video sequences are animated
representations of the particular game event.

Thus, for example, if the game event is a horse race with
twelve participating horses, the game generator memory can
store an animated race for each win, place and show
combination selected from the twelve horses.   The game
generator then retrieves from memory a predefined video
sequence of a race associated with the selected winning
numbers. This video sequence is broadcasted using standard
television transmission techniques so that the players can
watch the game and root for their selections. In addition,
the system determines which players are eligible for a
grand prize pool and after the broadcast of the game
announces the grand prize winner.

Each game event is randomly selectable by the game
generator. The selected event is retrieved from memory and
formatted for broadcast via, for example, RF transmission,
microwave transmission, fibre optic cabling or closed
5   circuit television lines.

Turning to the figures, a block diagram of a lottery system
according to one embodiment of the present invention is
shown in FIG. 1. The lottery system 10 includes a
10   plurality of remote on-line vendor stations 12 that are
linked over a wide area network (WAN) 14 to a central
station 16. A game generator 18 is connected to the
central station 16 over a wide area network 20. In this
configuration, the central station 16 acts as a
15   communication interface between the game generator 18 and
the remote on-line vendor stations 12. As a result, the
game generator can connect to existing lottery systems
having a plurality of remote on-line vendor stations
connected to a central station.
20
In another embodiment of the present invention, as shown in
FIG. 8, game generator 19 in lottery system 11 is connected
directly to a plurality of remote vendor stations 13 via
WAN 15 (or the Internet). The game may be transmitted via,
25   for example, a closed circuit television line. In this
configuration, the system does not need to be connected to
an existing lottery system.

To broadcast the video sequence of the race, the game
30   generator is connected to a broadcast interface 22 which
formats the video data stored in the game generator memory

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for broadcast via antenna 24. In this configuration, the
broadcast interface is configured for RF transmission of
television signals. The video is transferred in accordance
with known RF transmission methods. Alternatively, the
5   broadcast interface can be configured to format the video
data for microwave transmission to satellites and reception
by the public on conventional satellite dishes. In another
alternative configuration, the broadcast interface can be
configured to transmit the video along fiber optic cabling
10   or on closed circuit television lines. Finally, the
broadcast and/or communication with the vendor stations may
be through either a wired or wireless connection to the
Internet.

15   Referring now to FIG. 2 which shows a block diagram of a
game generator in accordance with an exemplary embodiment
of the present invention, game generator 98 preferably
includes a microprocessor based controller 26 having memory
28 for storing programs, such as system and application
20   programs. Memory 28 is provided with sufficient storage
capacity also to store numerous video sequences associated
with the particular game or race. The memory may include
RAM, ROM and mass storage memory devices.

25   To illustrate, the described lottery game may be portrayed
as, for example, a horse race with twelve horses competing.
Thus, for win, place and show results there are 1,320
possible winning combinations, i.e. 1,320 possible outcomes
representing twelve horses taken three at a time. As a
30   result, any one of 1,320 races can be broadcasted depending
on the selected outcome. The races are preferably animated

versions of a horse race.

To create high quality animated horse races, each of the
twelve horses are modeled and animated and then combined
5   with modeled and animated backgrounds to create the horse
race.   The animated race is then voiced over with a race
call and crowd and horse background noise to provide a
realistic horse race.

10   Modeling of the horses and jockeys is accomplished by
capturing the motions of real horses and jockeys on a
treadmill using known motion capturing techniques.   A
computer may then be used to process the captured data and
combine the captured motions with animated horses and
15   jockeys.   Once each horse and jockey are animated, the
twelve horses are combined with the animated background to
complete the animated race. Animation may be accomplished
in accordance with a number of computer generated animation
techniques, such as the methods disclosed in U.S. Pat. Nos.
20   4,951,039, 4,873,585 and 4,752,836, the contents of which
are incorporated herein by reference.

The races preferably are stored in memory as segments of
races, rather than complete races. The video sequence, at
25   the time of selection, is built from these segments to
create preferably a contiguous, seamless video sequence and
audio sequence of a race.   In an exemplary embodiment a
video sequence consists of four stages of segments.   The
available segments in the embodiment are in sets of 1
30   ("Lead In" stage), 660 ("Trunks" stage), 1320 ("Branches"
stage) and 3960 ("Leaves" stage).   The seams between

adjoined segments in a video sequence may be implemented as
a branching function. At each seam there is a common frame
that allows a seamless transition to one of the appropriate
segments in the following stage. Thus, in the exemplary
5   embodiment, the Lead In segment passes seamlessly into a
randomly selected one of six hundred sixty available Trunk
segments; each Trunk segment into a randomly selected one
of two appropriate Branch segments; and each Branch segment
into a randomly selected one of three appropriate Leaf
10   segments. Thus, the (three different) Leaf finishes for
each predetermined win, place and show combination may be
combined with different possible Branches and Trunks to
enhance entertainment through randomization, where
possible. For example, if the sequence 5, 7, 9 is randomly
15   selected as the winning win, place, show sequence, there
would be three completely different finishes, not to
mention assorted different intermediary Branches and
Leaves, for the particular win, place, show combination.
In addition, instead of having to animate, render and store
20   3,960 minutes (i.e. 1,320 different three-minute races) of
video files for a twelve horse race, the exemplary
embodiment described above requires only approximately
1,000 minutes.

25   When numbers in the selected winning sequence (of length K)
may repeat, e.g., defining winning horses in K respective
horse races, the video sequence that is composed would
comprise K races. Segmentation of each race preferably is
also used in this configuration. The number of available
30   segments in each stage may be different, since only the
winner of each race is of interest. There should be even

in this configuration a variety of available finishes (i.e.
Leaf segments) that would lead to each race result.
However, when a number appears more than once in the
randomly selected winning sequence of numbers, the
5   selection of at least the Leaf segments for the races
corresponding to that repeating number should be controlled
so that the segment is not repeated in the video sequence
of the K races.

10   Returning to FIG. 2, controller 26 is connected to
communication interface 30 to provide serial and/or
parallel data communications between controller 26, on the
one hand, and display 32, printer 34 and keyboard 36, on
the other hand.

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A random number generator 38 may be included in the game
generator to randomly select the winning numbers
representing the win, place and show horses, prior to the
broadcast of the race. The random number generator may be
20   a hardware based number generator or a program based number
generator, and either stand alone or integrated in the game
generator. Alternatively, a station operator can randomly
select the winning numbers representing the win, place, and
show horses and enter the numbers via keyboard 36.

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The random number generator can select any number of picks
from the set. For example, with 15 horses in the race, the
random number generator can draw anywhere from 1 to 15
numbers from the set. Also, the random number generator
30   can select either non-repeating numbers or a sequence that
includes numbers that may repeat. In a game with numbers

that may repeat, the K randomly selected numbers may
correspond to, for example, winning horses in K respective
races.

5   The game generator also includes a network communication
interface 40 that is configured for bidirectional
communications with the remote on-line vendor stations. In
one embodiment, the network communication interface 40
includes a microprocessor based communication controller 42
10   having memory and stored programs (e.g., system and
application programs). The controller 42 is connected to
modems 44 via serial interfaces 46. Depending upon the
communication requirements of the system, i.e., the
communication traffic, there may be a number of modems and
15   corresponding serial interfaces 46 to accommodate a large
number of remote player stations. The serial interfaces 46
provide a serial data buffer to communication controller
42. Memory 48 is connected to communication controller 42
and is provided to temporarily store data to be transferred
20   via the network, as well as valid data received from the
network for subsequent transfer to game generator
controller 26.

After the winning sequence of numbers is randomly selected,
25   by the random number generator or by an operator, and
entered, game generator controller 26 retrieves a
predefined video sequence of the game (e.g., a horse race)
from memory 28 and transfers the video sequence to a
broadcast interface 22. As described above, the video
30   sequence preferably comprises a plurality of stored
segments. Thus, in the preferred embodiment, game

generator controller 26 randomly selects for each stage of
the video sequence one of the segments appropriate for that
stage, and composes the selected segments for each stage
into a seamless video sequence.

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The video data is preferably in digital form and may be
formatted by, for example, a graphic/animation buffer 50
for transfer to the broadcast interface and/or to network
communication interface 40.

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In a preferred embodiment, segments are rendered directly
to a digital compressed format such as MPEG 2. This allows
the stored video image to be a very high quality. At the
time of broadcast, the segments are concatenated together

15   and fed to the broadcast interface which typically
transmits a NTSC compatible analog signal. MPEG 2 is the
same format used by satellite transmitters such as Direct
TV. When the broadcast is via satellite, the MPEG 2 files
may be transmitted directly without having to be converted

20   (i.e. decompressed). Also, the data may be transmitted in
serial digital format, since television stations will be
required to convert to digital broadcasts to comply with
legal and regulatory requirements.

25   FIG. 3 shows a block diagram of a remote on-line vendor
station in accordance with an exemplary embodiment of the
present invention. Generally, each remote on-line vendor
station 92 is configured for operation by an operator,
e.g., store personnel, or for operation directly by the

30   player. The operator or player enters the game parameters,
for example, the numbers of the respective win, place and

16

show horses, and pays for the game at the site of the
remote station. The entered game parameters are
hereinafter defined as the player selection data.

5   Preferably, each remote on-line vendor station includes a
central processing unit 60 connected to memory 62 having
stored therein system and application programs. The memory
may include RAM, ROM and mass storage memory devices. A
communication interface 64 is connected between the CPU 60
10   and printer 66, keyboard 68, and card reader 70 for
communication with the remote on-line vendor station. The
CPU 60 is connected to a display 72, such as a LCD display,
a monitor and the like, to provide visual messages or
prompts to the operator or player.
15
Communication interface 74 is connected to a wide area
network via modem 76 and to remote station CPU 60 to
facilitate data communication between the remote on-line
vendor stations and the game generator, directly or via a
20   central station.

In this configuration, the remote on-line vendor station is
configured for installation in, for example, a retail store
and operated by personnel within the store. The player (or
25   customer) selects, for example, the numbers of the
respective win, place and show horses (i.e., the trifecta)
and the operator can either enter the numbers via keyboard
68 or card reader 70 or elect the Quick-pick option for
random selection of the numbers by a computer. Player
30   selection data is stored in memory 62 along with
corresponding player identification data. The player

17

identification data may be the player's social security
number or other indicia which associate the player with the
player selection data.

5   In an alternative configuration, the remote on-line vendor
station may be a kiosk 80, as shown in FIG. 4.   The
internal components for the kiosk 80 are shown in FIG. 3.
The kiosk 80 includes a stand alone housing 82 that may be
located in public locations, such as shopping malls, and
10   players can enter player selection data via keyboard 68 or
card reader 70. In this embodiment, payment for the entry
into the lottery may be made by cash or by a payment card
medium, such as credit card, a debit card or the like,
which is inserted into card reader 78. A ticket or receipt
15   of the transaction is provided by printer 66.

FIG. 5 is an exemplary flow diagram of the operation of the
remote on-line vendor station.   Initially, the remote
station is maintained in an idle state in step 100 wherein
20   the display 72 can be continuously updated to show, for
example, statistical data and to provide instructions
regarding how to enter player selection data.   Once an
interrupt is received by the CPU 60, the CPU initiates a
data entry routine. If the remote station is operated by
25   an operator, the station prompts the operator to enter the
player selection data which as noted above can be entered
by keyboard 68 or card reader 70 (steps 102 and 104). If
the remote station is a kiosk, the player is prompted to
insert a payment .card into card reader 78 (steps 102 and
30   106). The CPU 60 then verifies that the card is valid by,
for example, automatically contacting known credit agencies

18

via modem 76 and receiving a code indicating whether the
card is valid or not (step 108). If the card is invalid,
then the player is notified on display 72 (step 110) that
the transaction cannot be completed and the station returns
5   to the idle state in step 100. If the card is valid, the
player is instructed to enter the player selection data
(step 104).

Using either type of remote on-line vendor station, when
10   the player selection data is entered, the CPU 60 stores the
data in memory 62, typically in RAM (step 112). In the
horse race example, the numbers of the win, place and show
horses are entered and stored until the last number is
entered (step 114). Once the player selection data is
15   completely entered, CPU 60 instructs the operator to enter
identification data which will be associated with the
player selection data for verification purposes in the
event the player (a) chooses the correct win, place or show
horse or (b) qualifies for and wins the grand prize (step
20   116). As noted, an example of player identification (ID)
data is a social security number.

In addition to requesting player ID data, CPU 60 retrieves
the time of day and date (i.e., time tag data) from a clock
25   (not shown) within the remote station (step 118) to
associate the player selection data with a particular time
and day for determining if the player has a winning ticket.
The ID data and the time tag data are stored in memory
along with the corresponding player selection data (step
30   120).

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Once the player selection data, the player ID data and the
time tag data are stored, the data is sent to the game
generator, directly or through a central station, via modem
76 (step 122). If the remote on-line vendor stations are
5   connected directly to the game generator then data is sent
to the game generator over the WA. After the data is
transmitted to the game generator, the remote station waits
for the game generator to reply that it received the player
selection and associated ID and time tag data (step 124).
10   If the reply is that the data received was invalid (step
126), the operator or player is notified via display 72
and/or printer 66 that a transmission error occurred and
the station returns to the idle state (steps 128 and 100).
If the reply is that the data transfer is complete (step
15   126) the player selection data and associated ID and time
tag data are printed on printer 66 to provide the player
with a receipt of the transaction which can be used by the
player to claim any winnings (step 130). Once the receipt
is printed, the station returns to the idle state of step
20   100.

FIG. 6 is an exemplary flow diagram of the transfer of data
to the game generator. The game generator is initially in
an idle state (step 200) and upon receiving an interrupt
25   performs the desired routine. In FIG. 6, the interrupt may
be a request from the remote station to send player
selection data to the game generator. When the remote
station requests to send data, the game generator provides
a reply indicating that the game generator is or is not
30   ready to receive the data (step 202). When the game
generator is ready to receive data, the remote station

sends the data to the game generator which stores the data in the network communication interface memory 48, seen in FIG. 2 (step 204). The network communication interface controller determines if the data transaction is complete

5   (step 206). If the data transaction is incomplete, the game generator replies to the remote station that the transaction is incomplete and returns to the idle state (steps 208 and 200). If the data transaction is complete, the game generator replies that the transaction is complete

10   and transfers the player selection, the ID and the time tag data to the main memory 24, seen in FIG. 2 (steps 210 and 212).

FIG. 7 is an exemplary flow diagram of the operation of the
15   game generator for generating the lottery results. Initially, the game generator is in an idle state (step 300) and upon receiving an interrupt, for example, an operator selected start command, the generator determines what the winning numbers are for a particular game. The
20   winning numbers can be randomly chosen and entered into the generator by an operator via keyboard 36 (steps 302 and 304), or by random number generator 38 (steps 302 and 306).

25   Once the winning numbers are generated, the controller 26 composes a video sequence having an outcome that corresponds to the randomly generated winning numbers (step 308). As discussed above, the video sequence is preferably a seamless composition of stored segments randomly selected
30   for corresponding stages of the video sequence.

The composed video sequence of the race is then transferred
in step 310 via the network communication interface or the
broadcast interface for broadcast, as described above.
Before broadcasting the video sequence of the race, the
5   game generator compares the selected winning sequence of
numbers to all the entries of player selection data (step
312) and determines the number of winners (step 314).

The game generator controller 26 then determines which
10   players qualify for the grand prize (step 316). As noted
above in the horse racing example, one criterion for
determining the grand prize participants is to select all
the players who selected the trifecta. Alternatively, all
players of the game may qualify for the grand prize. The
15   identities of the grand prize participants may be stored
in, for example, a grand prize data table (step 318) and
the winner of the grand prize may be randomly selected by
the random number generator 38 (step 320). Once the winner
of the grand prize is selected, the name of the winner is
20   broadcasted after the race (step 322).

It will be understood that various modifications can be
made to the embodiments of the present invention herein
without departing from the spirit and scope thereof. For
25   example, various types of network resources and protocols
may be used for the wide area network and various central
and remote station configurations may be employed.
Likewise, various animation techniques may be used to
recreate the races by which the lottery winner is
30   announced. Therefore, the above description should not be
construed as limiting the invention, but merely as

                              22

disclosing preferred embodiments thereof. Those skilled in the art will envision other modifications within the scope and spirit of the invention as defined by the claims appended hereto.

What is claimed is:

1. A lottery system graphically portraying a lottery result in animation as a race for video display, comprising:

    at least one vendor station configured to provide predetermined game parameters to a player for selection, the game parameters corresponding to race participants; and

    a game generator configured for data communications with the at least one vendor station, the game generator having

        a storage device storing a plurality of video segments of animated races;

        a lottery result selector randomly selecting at a predetermined time an order of finish of the race participants in the race to be graphically portrayed;

        a game controller retrieving selected ones of the video segments stored in the storage device according to the order of finish selected by the lottery result selector, and composing the retrieved segments into a video sequence; and

        a communication interface communicating the composed video sequence to the at least one vendor station.

2. The lottery system of claim 1 wherein the video sequence is contiguous and seamless.

3. The lottery system of claim 1 wherein

    the race comprises a plurality of stages,

    each stage has a corresponding subset of the plurality of video segments, and

    the game controller selects for each stage one video

24

segment from the corresponding subset.

4. The lottery system of claim 1 wherein
a plurality of combinations of the video segments
stored in the storage device are possible for each order of
finish, and
the game controller selects one of the plurality of
combinations that are possible for the selected order of
finish.

5.   The lottery system of claim 1 wherein the
plurality of video segments stored in the storage device
are in a digital compressed format.

6. The lottery system of claim 5 wherein
the game controller concatenates the selected video
segments, and
the   communication   interface   communicates   the
concatenated video segments in a serial digital format.

7. The lottery system of claim 1 wherein graphically
portrayed lottery games are generated and broadcasted
periodically.

8. The lottery system of claim 1 wherein the selected
segments retrieved from the storage device are distinct.

9. A method of conducting a lottery game graphically
portrayed in animation as a race for video display,
comprising the steps of:
(a) storing a plurality of video segments of animated

25

races in a storage device;

    (b) providing predetermined game parameters to a player for selection, the game parameters corresponding to race participants;

    (c) randomly selecting at a predetermined time after step (b) an order of finish of a plurality of participants in the race;

    (d) retrieving selected ones of the video segments from the storage device according to the randomly selected order of finish;

    (e) composing the selected segments into a video sequence; and

    (f) displaying the composed video sequence on a video display.

    10. The method of claim ·9, further comprising the step of selecting one player from a pool of all players of the lottery game as a grand prize winner.

    11. The method of claim 9 further comprising the steps of:

    digital compressing the video segments; and

    concatenating the selected digitally compressed segments for broadcast.

    12. The method of claim 9 wherein graphically portrayed lottery games are generated and broadcasted periodically.

    13. A lottery system which graphically portrays a lottery result in animation as K races, comprising:

26

at least one vendor station configured to provide predetermined game parameters to a player for selection, the game parameters corresponding to race participants of the K races, and the player selecting a sequence of K
5   selected ones of the game parameters corresponding to the K races; and

a game generator configured for data communications with the at least one vendor station, the game generator having

10   a storage device storing a plurality of animated races, and

a lottery result selector randomly selecting winners of the K races at a predetermined time after the selected game parameters have been communicated by the at least one
15   vendor station to the game generator,

wherein the game generator retrieves K selected ones of the plurality of animated races stored in the storage device according to the K race winners selected by the lottery result selector, and composes the retrieved races
20   into a video sequence,

the composed video sequence is communicated from the game generator to the at least one vendor station, and the received video sequence is displayed by the vendor station at a video display.

25

14.   The lottery system of claim 13 wherein the K selected animated races retrieved from the storage device are distinct.
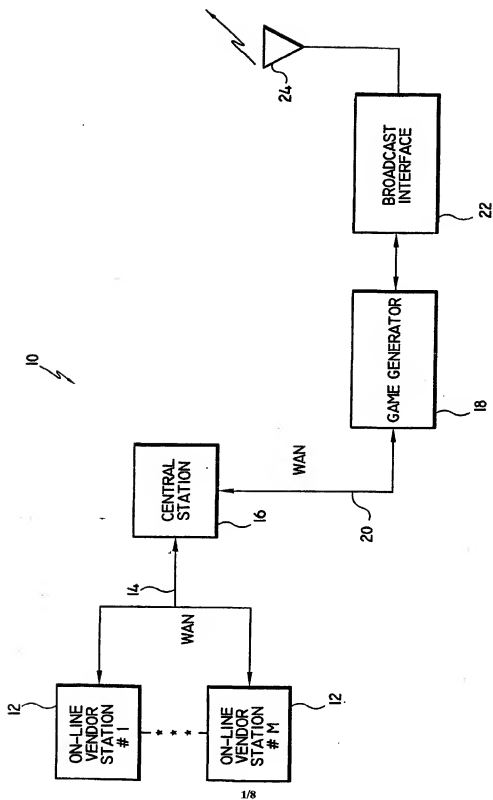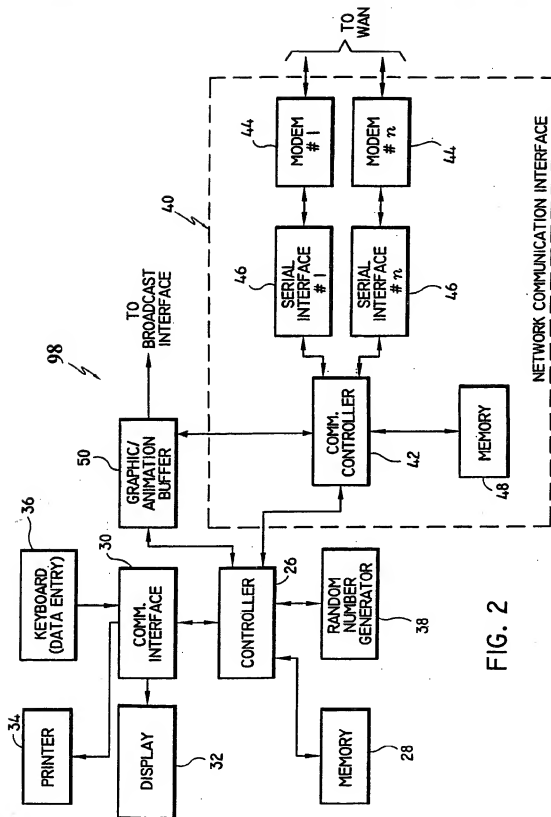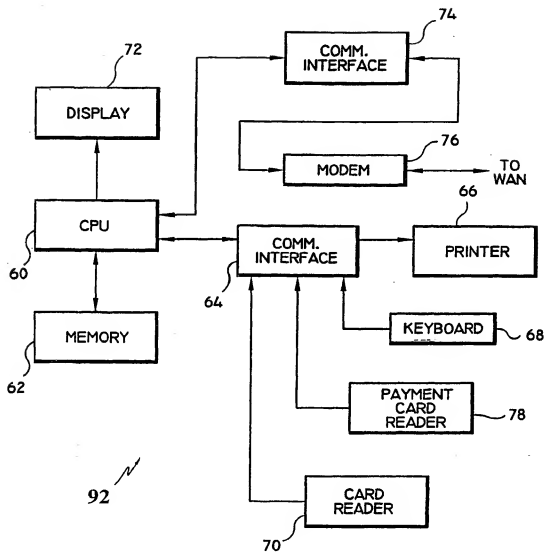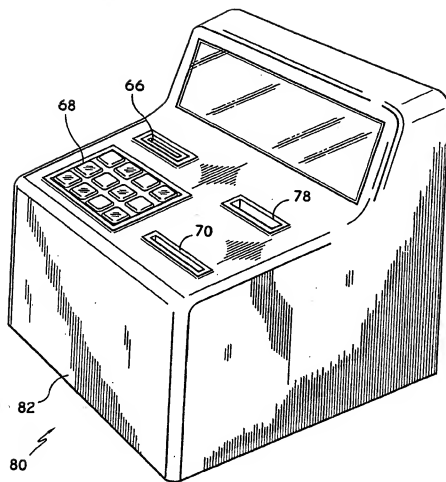
FIG. I
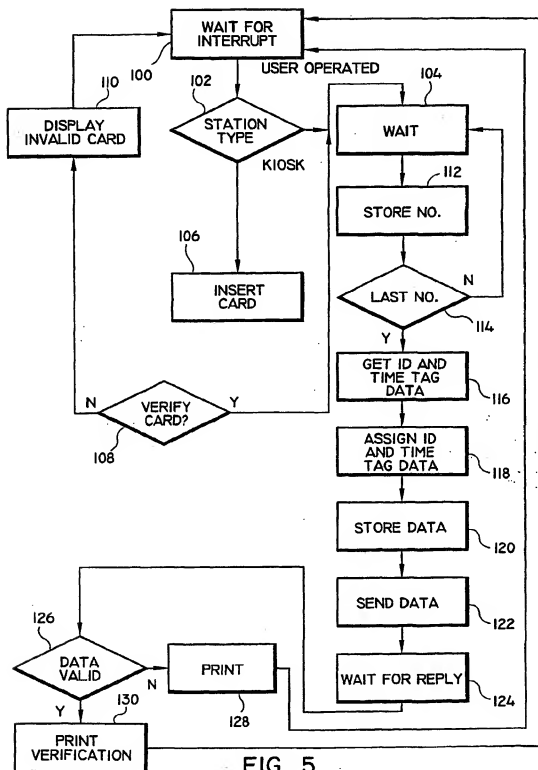
FIG. 2

FIG. 3

FIG. 4

FIG. 5
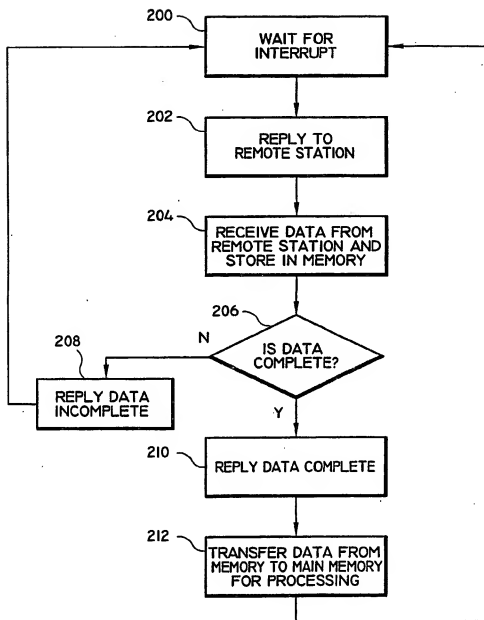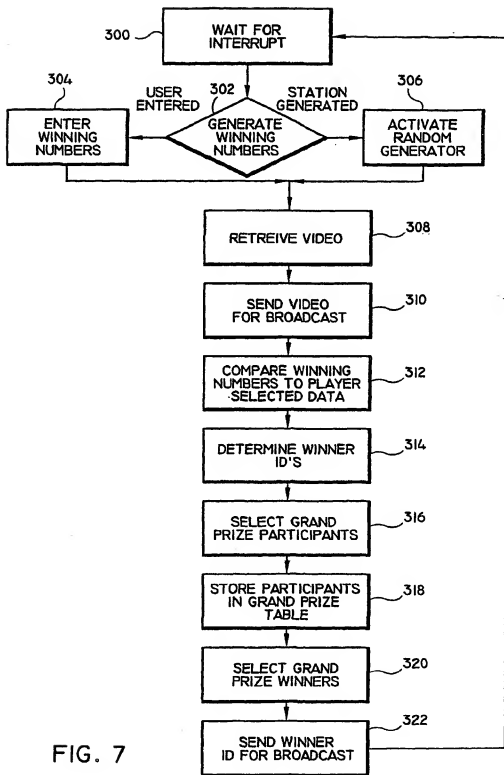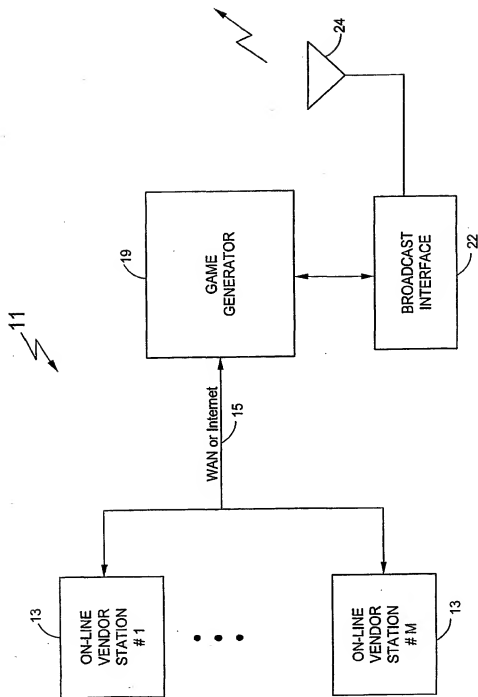
```
   200 ┐
        ┌─────────────────┐
        │   WAIT FOR      │
        │   INTERRUPT     │
        └─────────────────┘

   202 ┐
        ┌─────────────────┐
        │    REPLY TO     │
        │ REMOTE STATION  │
        └─────────────────┘

   204 ┐
        ┌──────────────────┐
        │ RECEIVE DATA FROM │
        │ REMOTE STATION AND│
        │  STORE IN MEMORY  │
        └──────────────────┘

            206 ┐
   208           ◇
  ┌──────────┐   IS DATA
  │REPLY DATA│N  COMPLETE?
  │INCOMPLETE│
  └──────────┘   Y

   210 ┐
        ┌──────────────────┐
        │REPLY DATA COMPLETE│
        └──────────────────┘

   212 ┐
        ┌──────────────────────┐
        │TRANSFER DATA FROM     │
        │MEMORY TO MAIN MEMORY  │
        │  FOR PROCESSING       │
        └──────────────────────┘
```

FIG. 6

300 — WAIT FOR INTERRUPT

304

USER ENTERED | 302 | STATION GENERATED | 306

ENTER WINNING NUMBERS ← GENERATE WINNING NUMBERS → ACTIVATE RANDOM GENERATOR

RETREIVE VIDEO — 308

SEND VIDEO FOR BROADCAST — 310

COMPARE WINNING NUMBERS TO PLAYER SELECTED DATA — 312

DETERMINE WINNER ID'S — 314

SELECT GRAND PRIZE PARTICIPANTS — 316

STORE PARTICIPANTS IN GRAND PRIZE TABLE — 318

SELECT GRAND PRIZE WINNERS — 320

SEND WINNER ID FOR BROADCAST — 322

FIG. 7

7/8

FIG. 8

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(71) Applicant: TELECOM PRODUCTIONS, INC.
[US/US]; 30 Perimeter Park Drive, Suite 101, Atlanta, GA
30341 (US).

(72) Inventors: LIBBY, Budd, O.; 325 Wynland Trace,
Dunwoody, GA 30350 (US). BOWER, Daniel, W.; 9585
Marsh Cove Court, Atlanta, GA 30350 (US).

(74) Agent: KATZ, Robert, D.; Cooper & Dunham LLP, 1185
Avenue of the Americas, New York, NY 10036 (US).

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(54) Title: IMPROVED LOTTERY SYSTEM
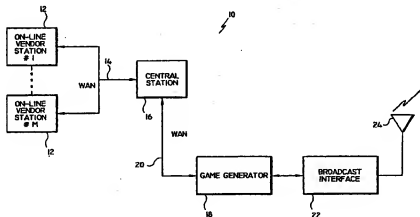
(57) Abstract: A computerized lottery or wagering system includes a game generator (18) and a plurality of vendor stations (12) that
permit players to select game parameters. The game is graphically portrayed in animation as one or more races At a predetermined
time for each game, selection of game parameters for that game is ended and a winning sequence of numbers is randomly generated.
The game generator selects and seamlessly composes a plurality of video segments into an animated video sequence of the race(s)
corresponding to the winning sequence of numbers, for broadcast via a broadcast interface (22).The video segments are rendered
directly to a compressed digital format to maintain the video image in the highest quality possible. The system determines which
players are eligible for a grand prize, and, after the game is shown, announces the grand prize winner. The games are generated and
broadcasted periodically.

AMENDED CLAIMS

[received by the International Bureau on 30 January 2003 (30.01.03);
claims 13, 14 amended, claims 15-22 added]

races in a storage device;

(b) providing predetermined game parameters to a
player for selection, the game parameters corresponding
to race participants;

5   (c) randomly selecting at a predetermined time after
step (b) an order of finish of a plurality of
participants in the race;

(d) retrieving selected ones of the video segments
from the storage device according to the randomly
10 selected order of finish;

(e) composing the selected segments into a video
sequence; and

(f) displaying the composed video sequence on a
video display.

15

10.   The method of claim 9, further comprising the
step of selecting one player from a pool of all players
of the lottery game as a grand prize winner.

20   11.   The method of claim 9 further comprising the
steps of:

digital compressing the video segments; and

concatenating the selected digitally compressed
segments for broadcast.

25

12.   The method of claim 9 wherein graphically
portrayed lottery games are generated and broadcasted
periodically.

30   13.   A lottery system which graphically portrays a
lottery result in animation as K races, comprising:

AMENDED SHEET (ARTICLE 19)

at least one vendor station configured to provide
predetermined game parameters to a player for selection,
the game parameters corresponding to race participants of
the K races, and the player selecting a sequence of K
5   selected ones of the game parameters corresponding to the
K races; and

a game generator configured for data communications
with the at least one vendor station, the game generator
having

10   a storage device storing a plurality of animated
races, and

a lottery result selector configured to randomly
select winners of the K races at a predetermined time,

wherein the game generator retrieves selected ones
15 of the plurality of video segments stored in the storage
device according to the K race winners selected by the
lottery result selector, and composes the retrieved video
segments into a video sequence of K animated races,

the composed video sequence is communicated from the
20 game generator to the at least one vendor station, and

the received video sequence is displayed by the
vendor station at a video display.

14.   The lottery system of claim 13 wherein the
25 video segments retrieved from the storage device are
distinct.

15.   A   game   generator   for   a   lottery   system
graphically portraying a lottery result in animation as a
30 race for video display, comprising:

a storage device adapted to store a plurality of

video segments of animated races;

   a lottery result selector adapted to randomly select
at a predetermined time an order of finish of the race
participants in the race to be graphically portrayed; and

5   a game controller, wherein the game controller
retrieves selected ones of the video segments stored in
the storage device according to the order of finish
selected by the lottery result selector, and composes the
retrieved segments into a video sequence.

10

   16.   The game generator of claim 15 wherein the
video sequence is contiguous and seamless.

   17. The game generator of claim 15 wherein
15   the race comprises a plurality of stages,
   each stage has a corresponding subset of the
plurality of video segments, and
   the game controller selects for each stage one video
segment from the corresponding subset.

20

   18. The game generator of claim 15 wherein
   each order of finish is associated with a plurality
of combinations of the video segments stored in the
storage device, and
25   the game controller selects one of the plurality of
combinations that are possible for the selected order of
finish.

   19.   The game generator of claim 15 wherein the
30 selected segments retrieved from the storage device are
distinct.

                    AMENDED SHEET (ARTICLE 19)

20. The game generator of claim 15 wherein the plurality of video segments stored in the storage device are in a digital compressed format.

21. The game generator of claim 20 wherein the game controller concatenates the selected video segments.

22. The game generator of claim 15, wherein the lottery result selector randomly selects winners of K races at the predetermined time, and

the game controller retrieves a selected subset of the video segments stored in the storage device, according to the K race winners selected by the lottery result selector, and composes the retrieved video segments into a video sequence of K races.

AMENDED SHEET (ARTICLE 19)